This listing of claims will replace all prior versions, and listings, of claims in the application:

The Status of the Claims

1. (Currently Amended) ~~1.~~ A method of manufacturing a semiconductor device comprising:

forming a contact hole in an insulating layer;

filling the contact hole with a copper layer;

planarizing the copper layer;

removing a copper oxide layer parasitically formed on the copper layer, wherein removing the copper oxide layer comprises performing a plasma process using nitrogen gas, and wherein removing the copper oxide layer exposes a surface of the copper layer;

forming a copper nitride layer having a thickness of about 50 to 200 Å on the surface of the copper layer;

depositing a copper barrier layer on the insulating layer and the copper nitride layer, the copper barrier layer being a nitride layer having a thickness of about 50 to 200 Å;

depositing an upper insulating layer on the copper barrier layer; and

forming an upper contact hole in the copper barrier layer and the upper insulating layer to expose the copper nitride layer.

2. (Currently Cancelled)

3. (Currently Cancelled)

4. (Currently Amended) A method as defined in claim **[[3]]** 1, wherein the ~~at least one of~~ ammonia gas ~~and nitrogen gas~~ is introduced into a reaction chamber at a flow rate of approximately 100 sccm to 200 sccm.

5. (Original) A method as defined in claim 4, wherein a temperature of the reaction chamber is maintained at approximately 300 to 500℃.

6. (Currently Amended) A method as defined in claim **[[3]]** 1, wherein removing the copper oxide layer and depositing the copper barrier layer are conducted in the same reaction chamber.

7. (Currently Amended) A method as defined in claim **[[2]]** 1, wherein removing the copper oxide layer comprises performing a heat treatment in an atmosphere of ~~ammonia gas or~~ nitrogen gas.

8. (Currently Amended) A method as defined in claim 7, wherein the atmosphere of ~~ammonia gas or~~ nitrogen gas is introduced into a furnace at a flow rate of approximately 5 to 20 slm.

9. (Original) A method as defined in claim 8, wherein a temperature of the furnace is maintained at approximately 400 to 600℃.

10. (Currently Cancelled)

11. (Currently Cancelled)

12. (Currently Cancelled)